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ABSTRACT

Intended for use by all printing (graphic arts) instructors in the Metropolitan Nashville Public Schools, this guide provides a sequential listing of course content and scope. A course description provides a brief overview of the content of the courses offered in the printing (graphic arts) program. General course objectives are then listed. Outlines of the course content are presented for these courses: printing I, II, and III. Suggested time and specific objectives are provided for each major topic. Topics include safety procedures, equipment care and use, composition, line and halftone photography, proofreading, stripping and platemaking, and press and bindery operations. A listing of resource materials, which includes textbooks, curriculum guides, and audio visual materials, is appended. (YLB)

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PRINTING
(Graphic Arts)
SCOPE AND SEQUENCE

VOCATIONAL EDUCATION

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Metropolitan Public Schools

Nashville Davidson County, Tennessee

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FOREWORD

This scope and sequence guide, developed for the Printing (Graphic Arts) Vocational Education program, represents an initial step in the development of a systemwide articulated curriculum sequence for all vocational programs within the Metropolitan Nashville Public School System. It is a direct result of needs expressed by teachers, parents, and the business community for sequential structure within the vocational education curriculum. An articulated vocational curriculum allows a student to move from one level of instruction to the next without repeating learning tasks already mastered, and without experiencing gaps in the presentation of relevant instructional material.

A goal of this curriculum effort is to provide teachers a usable guide based on input from the teachers. The initial step was an identification of course content, with all teachers having an opportunity to contribute. What follows is a publication using the teachers' contributions: a sequential listing of objectives and skills for each program offering.

This guide does not include all specific resource materials that may be used to assist students in acquiring minimum competencies. It is to serve as a guide for the sequence of course content and scope of what is to be taught. This guide content is extremely important and its use is encouraged. The suggested competencies and resource materials allow instructors an opportunity to be creative and resourceful in meeting the needs of individual programs and students.

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INTRODUCTION

This guide is designed to be used by all Printing instructors. Additional instructional units and reference materials may be added to this guide. It is suggested, however, that any rearranging or variation of unit placement be confined to the semester in which it is listed.

COURSE DESCRIPTION

Printing, one area of the graphic arts industry, is a method of mass reproduction of words or pictures. The printing course is designed to provide the student with basic skills needed for employment in the printing industry. Skills relevant to the printing industry such as: composition, line and halftone photography, developing and darkroom techniques, stripping and platemaking, offset press work and bindery skills are developed by the use of conventional classroom and production shop techniques.

Students have the opportunity to participate in Vocational Industrial Clubs of America (VICA) leadership training and in local, state and national skills competition.

GENERAL COURSE OBJECTIVES

1. To teach safety procedures in the area of graphic arts - printing
2. To teach proper care and use of equipment used in graphic arts - printing occupations
3. To present an overview of the graphic industry including the history of printing
4. To teach composition for reproduction, typesetting, layout and design
5. To teach line and halftone photography
6. To teach proofreading procedures
7. To teach stripping and platemaking
8. To teach press operations
9. To teach bindery operations
10. To provide career guidance and placement services

COURSE CONTENT FOR PRINTING I

(First Semester)

I. Introduction to graphic arts (2 weeks)

Specific objectives:

To become familiar with school policy
To become familiar with shop safety
To learn about the Vocational Industrial Clubs of America

A. Understands general policy

B. Understands school policy

C. Understands shop policy

D. Demonstrates safety principles

1. Shop and classroom safety

2. Required shop safety test

II. Legal considerations for the printer (1 week)

Specific objective:

To learn the legal, moral and ethical practices of printing

A. Knows legal restrictions of reproducing printed materials

B. Learns how to obtain a copyright

C. Understands counterfeiting repercussions

D. Realizes moral and ethical considerations

III. Graphic arts industries (2 weeks)

Specific objective:

To learn about the graphic arts industry

A. Becomes aware of the graphic arts industry

III. **Graphic arts industries continued:**

B. Appreciates the cultural contributions of graphic arts

C. Realizes the size of the industry

D. Becomes acquainted with graphic arts printing processes

IV. **Value of planning, designing and layout (4 weeks)**

Specific objectives:

To learn the importance of planning
To learn balance, contrast, unity and page proportion

A. Learns point and metric measurement system

B. Understands design principles

C. Practices thumbnail sketches

D. Creates rough layout

E. Composes comprehensive layout

F. Develops page and signature layout

V. **Composition methods (2 weeks)**

Specific objective:

To become aware of different methods of composition

A. Becomes aware of composition methods

B. Understands impact composition

C. Understands dry-transfer composition

D. Understands photographic composition

E. Understands computer-aided composition

VI. **Copy preparation (3 weeks)**

Specific objectives:

Specific objectives:

To prepare camera-ready copy
To best use photos and art work in layout

A. Becomes familiar with copy preparation/production

B. Learns uses of equipment and materials

C. Identifies kinds of copy

D. Learns techniques and uses of cropping, scaling and register marks

E. Makes the paste-up

F. Learns to develop notes and instructions to the printer

VII. Offset photography (4 weeks)

Specfic objective:

To learn offset camera and darkroom procedures

A. Develops awareness of process camera and darkroom procedures

B. Learns safety procedures to be used in the darkroom

C. Identifies classifications of process cameras

D. Selects film and chemicals for process photography

E. Becomes oriented to the darkroom

F. Exposes and develops a line negative

G. Calculates exposure for a halftone

H. Exposes and develops a halftone

I. Makes a film positive

J. Understands standardized darkroom procedures

COURSE CONTENT FOR PRINTING I

(Second Semester)

I. **Lithographic imposition (2 weeks)**

Specific objectives:

To attach negatives to masking sheet
To attach halftone negatives to windows left in master negative

A. Becomes familiar with lithographic imposition

B. Uses tools and materials of the stripper

C. Prepares layout for stripping

D. Attaches negatives to the masking sheet

E. Cuts windows and opaques

F. Uses multiple stripping techniques

II. **Lithographic image carriers (2 weeks)**

Specific objective:

To learn how to expose and develop printing plates

A. Develops awareness of lithographic image carriers

B. Exposes presensitized plates

C. Processes presensitized plates

D. Corrects, preserves and stores plates

E. Learns to use one-step photographic plates

III. **Lithographic image transfer (5 weeks)**

Specific objective:

To learn the operation of press or presses in print shop

A. Becomes generally familiar with offset-lithographic presswork

III. **Lithographic image transfer continued:**

*B. Learns offset-lithography press safety

C. Prepares the press

D. Runs the press

E. Adjusts machine operations

F. Recognizes and lists general printing problem possibilities

G. Cleans the press

H. Learns preventive maintenance

* Items B-H will be used for each press in the print shop

IV. **Finishing and binding (4 weeks)**

Specific objective:

To use the finishing and binding equipment in the print shop

A. Develops understanding of finishing and binding equipment and procedures

B. Learns safety procedures to be followed in finishing and binding

C. Learns finishing methods

1. Cutting
2. Folding
3. Scoring
4. Perforating
5. Collating
6. Punching and drilling
7. Jogging

D. Understands basic binding methods

D. Understands basic binding methods continued:

1. Plastic-cylinder binding

2. Wire stitching

3. Padding

V. Pulp and paper manufacturing (1 week)

Specific objectives:

To learn the difference in paper
To learn how paper is manufactured

A. Understands pulp and paper manufacturing techniques

B. Distinguishes among kinds, weights, grain and size of paper

VI. Printing ink manufacturing (1 week)

Specific objective:

To learn how ink is made

A. Learns how printing ink is manufactured

B. Learns composition of printing inks

VII. Graphic arts career opportunities (1 week)

Specific objective:

To learn about careers, educational and job opportunities in graphic arts

A. Identifies careers in graphic arts

B. Explores educational opportunities

C. Becomes familiar with job opportunities

OPTIONAL CURRICULUM

The following units may be added to your instructional program (depending upon facilities and equipment).

I. Screen printing (2 weeks minimum)

Specific objective:

To learn screen printing

A. Develops general knowledge about silk screen printing

B. Uses screen printing equipment for hand production

C. Learns safety procedures to be used in screen printing

D. Learns screen printing press construction

E. Develops artwork for screen printing

F. Prepares water-soluble film by hand

G. Uses photographic screen printing film

H. Masks the nonprinting areas

I. Demonstrates knowledge of the printing operation

J. Practices screen cleanup procedures

II. Photography (4 weeks)

Specific objectives:

To learn film speed (ASA numbers) and F stop settings
To learn photo print making and developing

A. Learns basics about the field of photography

B. Identifies types of cameras

C. Determines proper exposure

D. Learns types of photographic films and paper

II. **Photography continued:**

E. Develops film

F. Learns contact printing

G. Learns projection printing

H. Chooses appropriate methods of finishing and mounting prints

III. **Rubber stamp making (2-4 weeks)**

Specific objective:

To make rubber stamps

A. Gains understanding of rubber stamp making

B. Makes rubber stamps

C. Learns safety procedures

D. Practices correct clean-up procedures

IV. **Sign making (2 weeks)**

Specific objective:

To use sign press

A. Learns basic knowledge about sign making

B. Differentiates type styles

C. Learns spacing - leading and centering

D. Learns type lock-up

E. Learns inking type

F. Makes images

G. Practices correct clean-up procedures

V. **Thermography (1 week)**

Specific objective:

Specific objective continued:

To create raised printing

A. Understands thermography concepts

B. Learns safety procedures

C. Uses and understands equipment

D. Uses and understands materials

COURSE CONTENT FOR PRINTING II

(First and Second Semesters)

I. Layout and design for job production (7 weeks)

Specific objectives:

To put into practice the theory learned the first year
To become more proficient through experience
To prepare for postsecondary programs
To prepare for entry level job skills

A. Demonstrates use of overlays

1. Two color

2. Three color

B. Learns measuring and fitting copy

C. Learns proofreading and correcting

II. Composition for job production (4 weeks)

Specific objectives:

To put into practice the theory learned the first year
To become more proficient through experience

A. Uses photo composition

B. Learns how to use the strip printer

C. Uses impact (typewriter)

III. Copy preparation for job production (4 weeks)

Specific objectives:

To put into practice the theory learned the first year
To become more proficient through experience

A. Practices cropping, scaling and register marks

III. **Copy preparation for job production continued:**

B. Learns advanced techniques of making the paste up

C. Learns the pin system

IV. **Offset photograph for job production (6 weeks)**

Specific objectives:

To put into practice the theory learned the first year
To become more proficient through experience

A. Understands duotones

B. Understands process color camera operations

1. Filters

2. Screen angles

3. Panchromatic film

V. **Stripping and platemaking for job production (5 weeks)**

Specific objectives:

To put into practice the theory learned the first year
To become more proficient through experience

A. Learns multicolor techniques

B. Learns multiple imaging techniques

VI. **Press operation for job production (6 weeks)**

Specific objectives:

To put into practice the theory learned the first year
To become more proficient through experience

A. Learns multicolor techniques

B. Learns troubleshooting techniques

C. Demonstrates advanced press tehcniques

VII. Finishing and binding for job production (4 weeks)

Specific objectives:

To put into practice the theory learned the first year
To become more proficient through experience

A. Learns finishing methods

B. Learns paper cutting and trimming methods

C. Develops cost estimating skills

D. Selects ink for jobs

E. Selects paper for jobs

COURSE CONTENT FOR PRINTING III

(First Semester)

I. **Management techniques (3 weeks)**

Specific objectives:

To learn skills in equipment maintenance
To learn supervisory skills and techniques

A. Develops and understands management

B. Learns special services of the trade

C. Understands equipment needs of small print shop

II. **Equipment Maintenance (3 weeks)**

Specific objective:

To learn skills in general preventive maintenance

A. Learns the importance of general maintenance

B. Understands the importance of equipment maintenance

C. Understands losses due to down-time of equipment

III. **Cost estimating (2 weeks)**

Specific objective:

To learn the basics of cost estimating

A. Uses item by item estimating skills

B. Uses and develops formula estimating procedures

IV. **Layout and design for production (2 weeks)**

Specific objectives:

To become more proficient through experience and practice

Specific objectives continued:

To prepare for postsecondary programs

A. Demonstrates use of overlays

B. Applies measuring and fitting copy skills

C. Applies proofreading and correcting skills

V. Composition for job production (3 weeks)

Specific objectives.

To put into practice the theory previously learned
To become more proficient through experience

A. Applies photo composition skills

B. Applies CAC (computer assisted composition) procedures and skills

VI. Copy preparation for job production (5 weeks)

Specific objectives:

To put into practice the theory previously learned
To become more proficient through experience

A. Uses skills in cropping, scaling and registermarking

B. Applies techniques of paste-up

C. Applies pin system skills

COURSE CONTENT FOR PRINTING III

(Second Semester)

I. **Advanced offset photograph for job production (5 weeks)**

Specific objectives:

To put into practice the theory previously learned
To become more proficient through experience on advanced copy

A. Understands and uses duotones

B. Develops process color camera operation skills

II. **Advanced stripping and platemaking for job production (5 weeks)**

Specific objectives:

To put into practice the theory previously learned
To become more proficient through experience

A. Develops advanced multicolor techniques

B. Applies multiple imaging technique

III. **Advanced press operation for job production (6 weeks)**

Specific objectives:

To put into practice the theory learned
To become more proficient through experience

A. Applies multicolor techniques

B. Practices troubleshooting techniques

C. Learns and develops advanced press techniques

IV. **Finishing and binding for job production (2 weeks)**

Specific objectives:

To put into practice the theory learned previously
To become more proficient through experience

IV. **Finishing and binding for job production continued:**

A. Applies advanced finishing methods

B. Applies paper cutting and trimming skills

RESOURCE MATERIALS

Textbooks

Broekhuizen, Richard J. Graphic Communications, First Edition. Bloomington, Illinois: McKnight Publisher, 1973.

Cogoli, John E. Photo-Offset Fundamentals, 4th Edition. Bloomington, Illinois: McKnight Publishing Co., 1980.

Dennis, Dr. Ervin A. and Jenkins, Dr. John D. Comprehensive Graphic Arts, 1st Edition. Indianapolis: Bobbs-Merrill Educational Publishing, 1978.

Dennis, Ervin A. Lithographic Technology. Indianapolis, Indiana: The Bobbs-Merrill Co., Inc., 1980

Graphic Arts Technical Foundation. Black & White. Pittsburgh, Pennsylvania: GATF Staff, 1981.

Graphic Arts Technical Foundation. Graphic Arts Photography. Pittsburgh, Pennsylvania: GATF Staff, 1981.

Graphic Arts Technical Foundation. Solving Offset Ink Problems. Pittsburgh, Pennsylvania: GATF Staff, 1981.

Graphic Arts Technical Foundation. Solving Sheetfed Offset Press Problems. Pittsburgh, Pennsylvania: GATF Staff, 1981.

Hird, Kenneth F. Understanding Graphic Arts, 1st Edition. Cincinnati, Ohio: South-Western Publishing Company, 1982.

Prust, Z. A. Photo-offset Lithography. South Holland, Illinois: The Goodheart-Wilcox Co., Inc., 1977.

Silver, Gerlad A. Graphic Layout & Design. Albany, New York: Delmar Publishers Inc.,

Silver, Gerald A. Modern Graphic Arts Paste-up. Alsip, Illinois: American Technical Publishers, Inc., 1981.

Spence, William P. & Vequist, David G. Graphic Reproduction. Peoria, Illinois: Bennett Publishing, 1980.

RESOURCE MATERIALS continued:

Curriculum Guides

Bridging Education Today for Tomorrow. A catalog of Performance Objectives, Criterion - Referenced Measures and Performance Guides for Printing Occupations, Wayne State University, Michigan Dept. of Education-Vocational-Technical Education Service, 1978

Graphic Communications Education Program. Clemson University and State Department of Education and the Printing Industry of the Carolinas Foundation, 1977

PICA Program. Printing Institute of the Carolinas - Clemson University, 1977

Vocational Printing. State Department of Vocational & Technical Education, Stillwater, Oklahoma, 1978

Audio Visuals

Films

"The Graphic Arts Industry", DCA Educational Products Inc., Vol. 1 & 2, Overhead Projection, Stratford High School Materials Center, Nashville, Tennessee

"Introduction to Graphic Arts", (Safety), Stratford High School Materials Center, 3 Parts, 1, 2, & 3 (Kit), The 2000 Company, 3 Filmstrips, 3 Cassettes, Nashville, Tennessee, 1977, 15 minutes

"Photo Offset Printing", Film strips by McKnight Career Education, Stratford High School Materials Center, Nashville, Tennessee, 12 Filmstrips, 12 Cassettes 15 minutes each